

Date: Thu, 17 Feb 94 11:43:43 PST  
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>  
Errors-To: Info-Hams-Errors@UCSD.Edu  
Reply-To: Info-Hams@UCSD.Edu  
Precedence: Bulk  
Subject: Info-Hams Digest V94 #169  
To: Info-Hams

Info-Hams Digest                      Thu, 17 Feb 94                      Volume 94 : Issue 169

Today's Topics:

Amateur Radio Newsline #861 11 Feb 94  
Commercial Advertising via Internet?  
Communications links with Sarajevo  
HELP  
Icom2SRA mods?  
kits (2 msgs)  
starting campus radio club faq, need info  
Ten Tec PM2A

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>  
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

-----  
Date: Tue, 15 Feb 1994 20:42:16 GMT  
From: gulfaero.com!vixen.cso.uiuc.edu!howland.reston.ans.net!wupost!csus.edu!  
netcom.com!dparker@network.ucsd.edu  
Subject: Amateur Radio Newsline #861 11 Feb 94  
To: info-hams@ucsd.edu

"I am concerned that you continue to move forward and keep pace with  
the commercial side, so that the technologies you have on the  
air will in fact provide you all of the kinds of feature rich  
functions that are going to be available to the general public."  
Ralph Haller N4RH, FCC

Dahhh you mean like 20 WPM CW as a requirement?

Dave Parker, KD6RRS

-----  
Date: 17 Feb 94 18:13:36 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: Commercial Advertising via Internet?  
To: info-hams@ucsd.edu

Alexandr writes:

>  
> Hi, world!  
>  
> Anybody know where can I find a few quartz resonators for  
> governmental TV station in Novosibirsk, because component plants in  
> ^^^^^^^^^^^^^ (read commercial)  
> Russia are stay or closed and component distributors demand minimal order  
> in \$1000.

What the heck is this? This should have never wound up on the this forum.  
Maybe Alexandr needs to read the FAQ for this group.

I am getting exceedingly annoyed at the folks in the CIS pleading poverty.  
They found it no problem to spend 30% of their GNP for 40 years to "bury us"  
with their commie rhetoric & propoganda. Don't buy this feinged plea for help  
as genuine. Its just another attempt at the CIS apparatchiki trying to extort  
Western merchandise, monies, and/or aid thru pleas that play on our sympathies.  
73 de Walt - K2WK

-----  
Date: Wed, 16 Feb 1994 20:09:41 GMT  
From: world!slm@uunet.uu.net  
Subject: Communications links with Sarajevo  
To: info-hams@ucsd.edu

Even the biggest supporters of ham radio will admit that it can't  
substitute for a conventional telecommunications network;  
hams can't be expected to take the place of regular phone and  
postal service indefinitely.

Yet that is what the hams of Bosnia-Herzegovina have been trying to  
do for almost two years now. Serbian nationalists besieging Sarajevo,  
cut off postal service in April, 1992, and cut off  
telephone lines to the city in July, 1992. Sarajevans have been under  
a communications blockade ever since.

So, for this city of more than 300,000 people, there is  
virtually no way for them to contact loved ones outside. And,

people in the rest of the world with family and friends in Sarajevo have almost no way to find out if their loved ones are OK.

As a result, the few hams able to still operate in Sarajevo are overwhelmed with requests to try to pass messages in and out of the besieged city. They are doing heroic humanitarian work, but this can't substitute for restoration of phone lines. They really need our help to try to get their regular phone links back.

It turns out that the telecommunications equipment which could restore phone service between Sarajevo and the rest of the world IS SITTING IN A WAREHOUSE IN DALLAS, TEXAS, BECAUSE THE UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES REFUSES TO ALLOW IT TO BE FLOWN INTO SARAJEVO AIRPORT. The reason? U.N.H.C.R. says the equipment isn't "humanitarian aid!!!!"

I think hams more than anyone understand that providing communications during times of crisis is in fact a great humanitarian issue.

Several U.S. Congressmen, including Rep. Edward Markey, chairman of the House Subcommittee on Telecommunications and Finance, are working to try to get the U.N.H.C.R. to reverse its decision and allow the equipment to be flown into Sarajevo's airport (which is under U.N. control).

Markey's office is trying to get as many people as possible to contact their senators and congress(wo)men by Tuesday, Feb. 22, and ask them to co-sign a letter to the U.N. High Commissioner for Refugees urging that the equipment be allowed in.

I am hoping that some hams might consider helping this effort -- and our colleagues under siege in Sarajevo -- and make a few calls to your legislators urging them to sign onto the letter. The text of the letter, and Markey's correspondence to other Members of Congress, is below (taken from soc.culture.bosna-herzgvna). If you know who your representatives are but don't have their phone number, you can call the Capitol switchboard at 202-224-3121.

Thank you.

73, Sharon KC1YR

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This is the letter that Congressman Markey is asking his Congressional colleagues to sign (and that you should ask your legislators to sign):

Ms. Sadako Ogata  
United Nations High Commissioner for Refugees  
Case Postale 2500  
CH 1211 Geneve 2 Depot

Dear Commissioner Ogata:

We understand that the UNHCR has rejected a request to permit transport of telecommunications equipment into Sarajevo submitted on behalf of the Bosnian government by Mr. Muhamed Sacirbey, Bosnian Ambassador to the United Nations. As concerned Members of the United States Congress, we are writing to urge you to reconsider this decision and end the communications black out in this besieged city.

Although we respect the need to monitor closely all shipments into the Bosnian capital, we firmly believe that the telecommunications equipment constitutes humanitarian aid and should be airlifted at the earliest possible opportunity. Because telephone links have been severed by Serb militants throughout the 22 month siege, those with relatives and friends in Sarajevo are left to agonize daily over the possibility that their loved ones have been injured or killed by the relentless shelling of the city. Additionally, the total lack of communications equipment further isolates the residents of Sarajevo and prevents rapid access to emergency services. In fact, similar equipment is currently supporting humanitarian missions in Somalia and other areas. Therefore, we believe that this shipment to Sarajevo does constitute humanitarian aid, and lifting the ban on the transportation of telecommunications equipment would be a humane action.

We urge you to allow the telecommunications equipment to be shipped to Sarajevo. Thank you for your prompt attention to this matter.

Sincerely,

-----  
And this is the letter Congressmen Markey and John Dingell are sending to their colleagues.

RESTORE SARAJEVO'S LINK TO THE WORLD  
February 14, 1994

Dear Colleague:

Last week, the international community watched in horror as scenes from the bombed-out marketplace in Sarajevo were beamed into homes around the world. For those with relatives and loved ones in the Bosnian capital, these images were even more frightening. Because

telephone links have been severed by Serb militants throughout the 22 month siege, relatives and friends were left to agonize for hours and even days over the possibility that their loved ones were injured in the blast.

While residents of Sarajevo suffer under a total communications blackout, the telecommunications equipment needed to lift this informational embargo sits, packed and ready to go, in a warehouse in Dallas, Texas. The United Nations High Commissioner for Refugees, which controls shipments into the Sarajevo airport, has refused to allow the equipment to be delivered on the grounds that the materials do not constitute humanitarian aid. If relieving the anguish of thousands of Bosnians and their loved ones outside of Sarajevo does not qualify as humanitarian aid, then we do not know what does.

The U.S. Department of State, which has the authority to recommend to UNHCR that the equipment be sent, has refused to intervene because it was advised by the Defense Department that the materials could have military value. Clearly, the export of materials with a potential dual use should be carefully controlled. Within the United States government, the Commerce Department strictly regulates the export of American products with military applications. The claim that the telecommunications equipment bound for the Bosnian capital constitutes military assistance, however, is completely groundless. In fact, the identical equipment which UNHCR is denying Sarajevo can be shipped without a special export license to Iran, Iraq, China, Syria, and Pakistan, among others. If this equipment is so dangerous, why does the U.S. government allow it to be exported so widely while refusing to send it to Sarajevo, a city under siege with virtually no means to defend itself?

As NATO prepares for possible airstrikes, further shelling of Sarajevo by Serb forces is likely. Unless the UNHCR permits the transfer of this telecommunications equipment immediately, Sarajevans and their loved ones outside the city will be subjected again and again to the agonizing uncertainty resulting from a preventable communications embargo. After almost two years of bitter siege, Sarajevo's residents have been deprived of all civil, personal, and social rights. Everything that makes for regular urban living has already been taken away from Sarajevo and its citizens, and still the UNHCR continues to deny Sarajevans one of the most basic of all rights, the right to talk to each other. While we agree that UNHCR must monitor shipments into Sarajevo, we find some of their decisions rather curious. For example, the UNHCR blocked a shipment of surplus underwear headed for the Bosnian capital because of supposed military applications.

Lifting the ban on telecommunications would be a humane action,

especially considering the inhumane inaction which has characterized the international community's response to this bloody conflict up to this point. If you are interested in signing the attached letter to the United Nations High Commissioner for Refugees, Ms. Sadako Ogata, urging her to permit the transfer of the telecommunications equipment, please contact Mark Bayer of Representative Markey's office at 5-2836 by the close of business on Tuesday, February 22.

Edward J. Markey  
John D. Dingell

--  
electronic address: slm@world.std.com

-----  
Date: 17 Feb 94 17:11:00 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: HELP  
To: info-hams@ucsd.edu

I found some 7062 tubes...what are they...12au7's or what????

Clark Fishman WA2UNN cfishman@pica.army.mil

-----  
Date: Wed, 16 Feb 1994 16:39:44 GMT  
From: loral!h1b@network.ucsd.edu  
Subject: Icom2SRA mods?  
To: info-hams@ucsd.edu

Can someone email me mods for the above or point me to a location where I can obtain them via an ftp mail server (as I cannot ftp directly)?

Thanks,  
h1b@li.loral.com

--  
h1b@li.loral.com

-----  
Date: Thu, 17 Feb 1994 17:25:36 GMT  
From: agate!howland.reston.ans.net!usc!news.cerf.net!megatek!jimc@network.ucsd.edu  
Subject: kits  
To: info-hams@ucsd.edu

In article <2jull5\$rhc@gerald0.cc.utexas.edu> oo7@astro.as.utexas.edu (Derek Wills) writes:

>fred-mckenzie@ksc.nasa.gov (Fred McKenzie) says:

>

>>>I think the kits [Ramsey] sells are aimed towards people like  
>>>ourselves, who are quite willing to go through the ordeal of  
>>>de-bugging a kit, for the feeling of accomplishment from getting  
>>>it to work! Unfortunately, we are like dinosaurs about to become  
>>>extinct.

>

>>>The modern ham seems to think a kit is something you merely plug the parts  
>>>into, like assembling an IBM-clone computer from modules. From that point  
>>>of view, I'll admit that John's kits are not "modern".

>

> Something that has not been clear to me from the start of this thread  
> is why the people who are smart enough to de-bug assembled kits that are  
> obviously in dire need of it are not smart enough to assemble the things  
> from their own components in the first place. Is it cheaper buying one  
> of these kits than it is buying the individual components?

>

Depends on where you live. The answer is often "yes".

-jim

>

>Derek Wills (AA5BT, G3NMX)  
>Department of Astronomy, University of Texas,  
>Austin TX 78712. (512-471-1392)  
>oo7@astro.as.utexas.edu

--

Jim Campbell "The Tye-Dye Guy" | "Remember to tweet!"  
jimc@megatek.com | When in doubt, you're probably  
WB6ZPB NSS ASA TNS | unsure about something

-----

Date: Thu, 17 Feb 1994 15:59:09 GMT

From: agate!howland.reston.ans.net!europa.eng.gtefsd.com!emory!wa4mei.ping.com!  
ke4zv!gary@network.ucsd.edu

Subject: kits

To: info-hams@ucsd.edu

In article <2jull5\$rhc@gerald0.cc.utexas.edu> oo7@astro.as.utexas.edu (Derek Wills) writes:

>

> Something that has not been clear to me from the start of this thread

> is why the people who are smart enough to de-bug assembled kits that are  
> obviously in dire need of it are not smart enough to assemble the things  
> from their own components in the first place. Is it cheaper buying one  
> of these kits than it is buying the individual components?

It can be, but mostly it's *\*easier\** to buy from one source instead of chasing down components from a bunch of different vendors, all of whom seem to have minimum orders well above the price of the components you need from them. I hate having to deal with vendors who are geared to PO numbers and 1000 unit pricing for my little onesy twosy purchases. I can easily run up a *\*phone\** bill as high as the kit cost just tracking down vendors who will sell me the parts.

So I'm willing to pay a premium to the kitmaker because he provides a real service by acting as my purchasing agent for project components. Where some of them fall down is in the *\*design\** of their projects. Their services are rather useless if they supply you with the wrong parts for the wrong circuitry to do the job properly. I think the kit designer has a responsibility to produce a kit that can meet it's claimed specifications when assembled by someone competent to follow instructions. If a lab full of test equipment and ad hoc circuit changes are required for the project to successfully meet FCC specs, that should be stated up front in the advertising.

My main gripe with the Ransey transceiver kit is that the builder is led to believe that he can successfully complete the project with only a frequency counter, power meter, and DVM. That's not true. If you follow the instructions to the letter, you'll have a radio that won't meet advertised specs, and will have an output spectrum that looks like a comb on the spectrum analyzer. You *\*cannot\** just peak that PA for maximum output and have a clean spectrum.

Note: Ramsey isn't the only offender here. Hamtronics kits are at least as bad. In fact, just getting a clean oscillator that will start reliably in their 70cm converter is just short of impossible with the circuitry they provide. You can either get an easy starting comb generator, or you can get a clean spectrum on an oscillator that won't start. Sheesh! A simple design change fixes the problem, but you shouldn't be expected to have to do that.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

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Date: 15 Feb 94 20:40:18 GMT  
From: gulfaero.com!vixen.cso.uiuc.edu!howland.reston.ans.net!gatech!prism!  
gt0265d@network.ucsd.edu  
Subject: starting campus radio club faq, need info  
To: info-hams@ucsd.edu

jrl2@cornell.edu (Jeffrey Luszcz) writes:

>Hello,

> I would like to start a FAQ for Collage Amateur Radio Clubs. If you know  
>of a radio club on campus could you send me some info about it. IUm looking  
>for

<< INFO DELETED >>

Well, I'd like to start with my own club, The Georgia Tech Amateur Radio Club  
(W4AQL). We are at Georgia Tech in Atlanta, and have undergrads, graduates,  
alumni, faculty and staff, and a few others as members. Our officials are:

Sponsor: Dr. Paul Steffes (paul.steffes@ee.gatech.edu)  
President: Dave Kunkee K0DI (gt5830b@prism.gatech.edu)  
VP: Jeff Tucker N9HZQ (tucker@eedsp.gatech.edu)  
Treasurer: Dave Huggins N4RMM (david.huggins@gtri.gatech.edu)  
Secretary: Carrie Carter N9JSR (carter@magnolia.gatech.edu)  
Shack Steward: Mike Whaley KD4UGI (whaley@hibiscus.gatech.edu) (that's me!)  
Shack phone: (404) 894-2971  
Shack Address: Room E-180, Electrical Engineering Bldg, Georgia Tech

We have a repeater on 145.15 (input 144.55) located on the GT campus,  
with a remote site on 145.05 in Duluth, GA. Our shack is very well equipped,  
with 2 Kenwood TS-940S's, an icom and a Yaesu VHF rig (ferget the numbers)  
two Alpha 77 amps on the Kenwoods, and the following antennas: TH-6, 10,15, and  
20 meter beams, 2m and 70cm satelllite antennas, and 80 and 160 meter dipoles.  
We probably have more up there, but between the 3 towers I can't remember  
all of it :-)

GTARC was started by 1927 for sure, and we believe that it may have existed as  
early as 1911- we're still trying to corroborate that info. We have approxi-  
mately 50 members or so, who operate on all bands and all modes, especially  
while contesting! The club has an email server at listserv@gitvm1.gatech.edu,  
or you can send mail to the club account at eew4aql@prism.gatech.edu. We  
would be very happy to hear from any interested folks out there, especially  
those who are or have been associated with Tech or the club.

>Even if you canUt answer all the questions, oh well, its a start. I will  
>put the

>info on a ftp site and/or post if people are interested.  
>Thanks,

>-Jeff Luszcz N2TIQ  
>jrl2@cornell.edu  
>Cornell Amateur Radio Club W2CXM

Well, there's the Rambling Wreck contribution. Good luck to you on this project--- and if anyone else out there wants to organize some sort of get-together between Tech and some other school (UGA excepted ;- ) let us know!

73 de KD4UGI

```
*****
* Mike "Gator" Whaley           K    Chief of Aerospace Engineering      *
* whaley@hibiscus.gatech.edu    D    George P. Burdell Engineering Inc.  *
* gt0265d@prism.gatech.edu      4                                *
* Georgia Tech Box 40265        U    "Ipecac- isn't that a Genesis album?" *
* Atlanta, GA 30332             G                                --- Joel, MST 3K *
* (404) 206-0958                I                                *
*****
* I absolutely refuse to put a disclaimer here: All opinions expressed above *
* are EXACTLY what Georgia Tech would tell you, VERBATIM, with NO DIFFERENCES.*
*****
```

--

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*****
* Mike "Gator" Whaley           K    V.P. of Aerospace Engineering      *
* whaley@hibiscus.gatech.edu    D    George P. Burdell Engineering Inc.  *
*****
```

-----  
Date: 16 Feb 1994 14:26:20 -0600  
From: elroy.jpl.nasa.gov!swrinde!cs.utexas.edu!not-for-mail@ames.arpa  
Subject: Ten Tec PM2A  
To: info-hams@ucsd.edu

Anyone have a Ten Tec PM2A manual they could copy? I will pay duplication and shipping.

thanks

73

Jeff, AC4HF

-----  
Date: Tue, 15 Feb 1994 20:30:16 GMT  
From: gulfaero.com!vixen.cso.uiuc.edu!howland.reston.ans.net!wupost!csus.edu!  
netcom.com!wylz@network.ucsd.edu  
To: info-hams@ucsd.edu

References <1994Feb11.030138.403@megatek.com>, <CL2txF.8EJ@srigenprp.sr.hp.com>,  
<2jqilt\$rer@pegasus.cc.ucf.edu>  
Subject : Re: Nude amateur radio clubs

In article <2jqilt\$rer@pegasus.cc.ucf.edu>,  
John W. Meaker <jm6033@pegasus> wrote:  
>Alan Bloom (alanb@sr.hp.com) wrote:

>  
>: How many people have received their free QSL card from K4NBN "No Bad News"?  
>: (He used to have a monthly ham ad in QST.) The nude lady in the QSL photo  
>: was indeed a kind of centerfold, although not the type you might expect.  
>: It was done as a promotion for a nudist colony in Georgia or somewhere.

>  
>: AL N1AL  
>

> I'm curious about nude QSL cards. Would anyone be offended if they  
>received a QSL card in the mail with nude people on it? Would it be

It would depend on who received it. Some people would feel offended,  
others not.

>better to mail the card in an envelope? The envelope increases the  
>cost of mailing a QSL considerably, and cost a consideration when you  
>mail many cards.

>  
> John Meaker -- kr4ah

> Disclaimer - I am not responsible for the actions of  
> any Alpha-Hotels other than myself.

>  
>  
>

--

=====  
| Scott Ehrlich            Internet: wylz@neu.edu        BITNET: wylz@NUHUB    |  
Amateur Radio: wylz            AX.25: wylz@k1ugm.ma.usa.na
Maintainer of the Boston Amateur Radio Club hamradio FTP area on
the World - world.std.com    pub/hamradio

=====

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Date: Thu, 17 Feb 1994 17:03:09 GMT  
From: agate!howland.reston.ans.net!europa.eng.gtefsd.com!emory!wa4mei.ping.com!  
ke4zv!gary@network.ucsd.edu  
To: info-hams@ucsd.edu

References <bote.760946660@access1>, <1994Feb12.160701.4407@ke4zv.atl.ga.us>,  
<1994Feb15.060544.8419@vigard.mef.org>  
Reply-To : gary@ke4zv.atl.ga.us (Gary Coffman)  
Subject : Re: Medium range point-to-point digital links

In article <1994Feb15.060544.8419@vigard.mef.org> mdf@vigard.mef.org (Matthew Francey) writes:

>gary@ke4zv.atl.ga.us (Gary Coffman) writes:  
>>So an 8 bit system would have a SNR of  $10 \cdot \log(2^9) = 27$  db.  
>  
>heywaitaminute. isn't the SNR a power ratio? you've  
>done a voltage ratio here ...

Heh, no, I did a power ratio when I was dealing with voltage ratios.  
As Jon noted, I should have used  $20 \cdot \log(2^9) = 54.18$  db.

>>per second. That requires a very good brickwall filter, however,  
>>so sampling is usually done at a somewhat higher rate, say 3X  
>>or 4X the highest audio frequency. Lets pick 3X. So our required  
>>bit rate is  $16 \cdot 15,000 = 240$  kb/s.  
>  
>but after your oversampling and filtering, you don't bother with  
>the "in-between" samples anymore ... you still end up transmitting  
>10kbps (in your example).

No. The best we can do is cut the number of samples down to the  
Nyquist limit of  $2 \cdot F_{\text{cutoff}}$  by decimation and multiply by the  
number of bits per sample. So we're down to 10 kilosamples/sec  
times 8 bits per sample or a 80 kb/s digital bit stream. (But  
I think you meant that.)

>tho i would say that 8kilosamples/second @ 8bits is quite accepatable.  
>64kbps. using an ADPCM encoder you can chop this in half.

Yes, data compression can reduce the required transmission bit rate.  
I've been dealing with only the raw sample data so far.

>if you have a soundblaster, you can experiment with both sample rate  
>and resolution ... 4k samples/sec is too low, 6k is passable. fewer

>than about 5 bits would probably make things very irritating.

Yeah. If you further reduce Fcutoff, you can lower the sample rate, and if you reduce the SNR, you can use fewer bits per sample. But we were trying for "broadcast grade" transmission here. And we didn't even make that because we restricted Fcutoff to 5 kHz. If we'd insisted on a 15 kHz Fcutoff, the required bit rate would be 3x more, or 240 kb/s. Applying the \*correct\* formula, 5 bit samples would give a SNR of  $20\log(2^6)=36$  db. That actually looks fairly acceptable for ham grade channels. But there's another effect we haven't discussed. That's intermodulation distortion. With a 5 bit sample, we have products at 5 times the sample rate multiplied by each frequency in the sampled waveform. If our D/A isn't linear out to a fairly high frequency, we can get mixing products, or beats, between the various sample products that can wind up down in the audio passband. That'll give us harsh buzzing artifacts in our audio that simple filtering can't remove. The higher the sample rate, the less these step products become noticable. They tend to converge to an infrasonic frequency that's easily filtered.

>>Or we can abandon voice grade radios for the links and use purpose  
>>built digital radios with higher baud rates. If we take a 56 kb  
>>WA4DSY RF modem (GRAPES), and couple that with an on the fly  
>  
>or you could just get a pair of gunplexers. pricey, but you also  
>get the beginnings of a \*very\* high speed (>1Mbps) data link. voice/packet/  
>whatever.  
>  
>price/performance/future: how much are gunplexers, how much are  
>the WA4DSY modem/radios and compare what both are eventually capable of.

Well the WA4DSY modem is \$250, and then you need a transverter. That can run from \$150 to over \$300, and you need the digital driver to generate and control the bits to the modem. Say the total is \$500-\$600 per end for the package. That means a link is going to cost \$1000-\$1200 plus feedline and antennas. Paths of 30-40 miles are fairly routine, barring major terrain blockage, and good high sites can do much better than that.

M/Acom 10mw gunnplexer transceivers are available for on the order of \$350 from SI, or raw gunnplexers can be found for \$30-\$70 on the surplus market. But you have to design an AFC system, and the high speed digital modulator/demodulators for them. Find dishes for them, and find line of sight paths for the links. Costs could be similar, around \$1000 per link, but site selection would be much more restricted, and likely range as well (only a couple of miles for reasonable sized dishes and average terrain). Ten watts and 4 foot dishes can give 50+ mile paths at video bandwidths under good conditions, but that's serious money. It could be worth it for the higher throughput in some cases.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

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End of Info-Hams Digest V94 #169

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